

What is Claimed is:

1. A safety lighter, comprising:

a lighter body comprising a casing defining a liquefied gas chamber for containing a predetermined volume of liquefied gas therein;

5 a supporting frame having an outer sealing surface sealedly attached with an inner surface of said casing;

a gas emitting nozzle mounted on said supporting frame to communicate with said liquefied gas chamber for emitting said gas from said liquefied gas chamber in a controlled manner;

10 an ignition device supported by said supporting frame for igniting said gas emitted from said gas emitting nozzle; and

15 a sealing arrangement comprising upper and lower sealing rims spacedly and integrally provided along an opening portion of said inner surface of said casing in a continuous step-shoulders shape wherein said upper and lower sealing rims are sealedly attached with said outer sealing surface of said supporting frame to form two sealing lines along said upper and lower sealing rims respectively to sealedly mount said supporting frame on said lighter body for sealedly retaining said liquefied gas within said liquefied gas chamber.

20 2. The safety lighter, as recited in claim 1, wherein each of said upper and lower sealing rims is integrally formed around said opening portion of said inner surface of said casing in said step-shoulders shape by physically reducing a thickness of said opening portion of said casing.

25 3. The safety lighter, as recited in claim 1, wherein said outer sealing surface of said supporting frame is an inclined surface that substantially attaches with said upper and lower sealing rims at the same time to form said sealing lines respectively to sealedly mount said supporting frame on said lighter body.

4. The safety lighter, as recited in claim 2, wherein said outer sealing surface of said supporting frame is an inclined surface that substantially attaches with said upper and lower sealing rims at the same time to form said sealing lines respectively to sealedly mount said supporting frame on said lighter body.

5. The safety lighter, as recited in claim 1, wherein said lighter body further comprises a reinforcing wall affixed between two inner walls of said casing to divide said liquefied gas chamber into two compartments, wherein said reinforcing wall is upwardly extended towards said opening portion of said casing to define a communication cavity between said reinforcing wall and said supporting frame to communicate between said 10 two compartments, wherein said reinforcing wall has a top edge having a U-shaped formed between said two inner walls of said casing within said communication cavity to strengthen said casing at said communication cavity.

15. The safety lighter, as recited in claim 2, wherein said lighter body further comprises a reinforcing wall affixed between two inner walls of said casing to divide said liquefied gas chamber into two compartments, wherein said reinforcing wall is upwardly extended towards said opening portion of said casing to define a communication cavity between said reinforcing wall and said supporting frame to communicate between said two compartments, wherein said reinforcing wall has a top edge having a U-shaped formed between said two inner walls of said casing within said communication cavity to 20 strengthen said casing at said communication cavity.

25. The safety lighter, as recited in claim 3, wherein said lighter body further comprises a reinforcing wall affixed between two inner walls of said casing to divide said liquefied gas chamber into two compartments, wherein said reinforcing wall is upwardly extended towards said opening portion of said casing to define a communication cavity between said reinforcing wall and said supporting frame to communicate between said two compartments, wherein said reinforcing wall has a top edge having a U-shaped formed between said two inner walls of said casing within said communication cavity to strengthen said casing at said communication cavity.

30. The safety lighter, as recited in claim 4, wherein said lighter body further comprises a reinforcing wall affixed between two inner walls of said casing to divide said liquefied gas chamber into two compartments, wherein said reinforcing wall is upwardly extended towards said opening portion of said casing to define a communication cavity

between said reinforcing wall and said supporting frame to communicate between said two compartments, wherein said reinforcing wall has a top edge having a U-shaped formed between said two inner walls of said casing within said communication cavity to strengthen said casing at said communication cavity.

5        9. The safety lighter, as recited in claim 5, wherein two sides of said top edge of said reinforcing wall are upwardly extended along said two inner walls of said casing respectively towards said lower sealing rim to increase a thickness of said casing at said communication cavity.

10      10. The safety lighter, as recited in claim 6, wherein two sides of said top edge of said reinforcing wall are upwardly extended along said two inner walls of said casing respectively towards said lower sealing rim to increase a thickness of said casing at said communication cavity.

15      11. The safety lighter, as recited in claim 7, wherein two sides of said top edge of said reinforcing wall are upwardly extended along said two inner walls of said casing respectively towards said lower sealing rim to increase a thickness of said casing at said communication cavity.

20      12. The safety lighter, as recited in claim 8, wherein two sides of said top edge of said reinforcing wall are upwardly extended along said two inner walls of said casing respectively towards said lower sealing rim to increase a thickness of said casing at said communication cavity.

25      13. The safety lighter, as recited in claim 1, wherein said sealing arrangement further comprises two sealing rings spacedly and coaxially mounted around said gas emitting nozzle to sealedly mount said gas emitting nozzle on said supporting frame such that said two sealing rings functions as two gas leaking barriers for preventing said liquefied gas from leaking between a connection between said gas emitting nozzle and said supporting frame.

30      14. The safety lighter, as recited in claim 4, wherein said sealing arrangement further comprises two sealing rings spacedly and coaxially mounted around said gas emitting nozzle to sealedly mount said gas emitting nozzle on said supporting frame such that said two sealing rings functions as two gas leaking barriers for preventing said

liquefied gas from leaking between a connection between said gas emitting nozzle and said supporting frame.

15. The safety lighter, as recited in claim 8, wherein said sealing arrangement further comprises two sealing rings spacedly and coaxially mounted around said gas emitting nozzle to sealedly mount said gas emitting nozzle on said supporting frame such that said two sealing rings functions as two gas leaking barriers for preventing said liquefied gas from leaking between a connection between said gas emitting nozzle and said supporting frame.

10 16. The safety lighter, as recited in claim 12, wherein said sealing arrangement further comprises two sealing rings spacedly and coaxially mounted around said gas emitting nozzle to sealedly mount said gas emitting nozzle on said supporting frame such that said two sealing rings functions as two gas leaking barriers for preventing said liquefied gas from leaking between a connection between said gas emitting nozzle and said supporting frame.

15 17. The safety lighter, as recited in claim 13, wherein said sealing arrangement further comprises two holding grooves spacedly provided around said gas emitting nozzle to respectively hold said two sealing rings around said gas emitting nozzle.

20 18. The safety lighter, as recited in claim 14, wherein said sealing arrangement further comprises two holding grooves spacedly provided around said gas emitting nozzle to respectively hold said two sealing rings around said gas emitting nozzle.

25 19. The safety lighter, as recited in claim 15, wherein said sealing arrangement further comprises two holding grooves spacedly provided around said gas emitting nozzle to respectively hold said two sealing rings around said gas emitting nozzle.

30 20. The safety lighter, as recited in claim 16, wherein said sealing arrangement further comprises two holding grooves spacedly provided around said gas emitting nozzle to respectively hold said two sealing rings around said gas emitting nozzle.